

PATENT COOPERATION TREATY

PCT

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)



Y/INTO PCT

Applicant's or agent's file reference PCT2108JK904Ka1	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/JP 03/15368	International filing date (day/month/year) 02.12.2003	Priority date (day/month/year) 05.12.2002
International Patent Classification (IPC) or both national classification and IPC F16L59/065		
Applicant MATSUSHITA REFRIGERATION COMPANY et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 29.06.2004	Date of completion of this report 13.04.2005
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Donnelly, C Telephone No. +49 89 2399-2763 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/JP 03/15368**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-72 as originally filed

Claims, Numbers

1-25 received on 04.03.2005 with letter of 04.03.2005

Drawings, Sheets

1/30-30/30 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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International application No. **PCT/JP 03/15368**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3-25
	No: Claims	1,2,
Inventive step (IS)	Yes: Claims	
	No: Claims	3-25
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/JP 03/15368

1. Patent document US-A-6322743 (D1) (see in particular col. 2, lines 15 to 38) describes a vacuum heat insulator comprising a gas barrier enveloping member having a heat seal layer, and a flat core member, wherein said core member is evacuated and sealed between enveloping members having mutually facing heat seal layers, and by heating the (and) pressing the portion including the core member between the enveloping members, the mutually facing heat seal layers are heated and fused along the core member shape.
2. It has been argued that D1 teaches that the compression should be executed in a different step after the sealing, however, this reasoning is difficult to follow for claim 1 which is directed towards a product rather than a method and the sequence of these operations would not appear to lead to any constructional difference in the final product. Further D1 at col. 2, lines 21-23 clearly refers to simultaneous sealing and compression and at col 7, lines 3-19 specifies materials suitable for thermoplastic heat sealing and indicates that this is a suitable sealing method.

Further, claim 1 is not clear as regards the phrase "by heating the pressing the portion " which has been taken to be "by heating and pressing the portion" and which as mentioned above relates anyway to a method step of manufacture rather than a clearly identifiable feature of the final product (Art. 6 PCT).

3. Thus, the subject-matter of claim 1 does not meet the requirements of Article 33(2) PCT as it is not new.
4. As regards claim 2, the nearest prior art document is WO-A-0075557 (D2) (see in particular page 10, lines 19-31) which describes a vacuum heat insulator having plural core members (1-5) coated with a gas barrier enveloping member ("bag capable of being made air-tight), and evacuating and sealing the inside of the enveloping member, wherein said plural core members are disposed in lattice layout or zigzag layout at mutual specific intervals so as to form folding lines in two or more directions in the position between the adjacent core members (see figure 1A), heat seal parts of the enveloping member are disposed around the core members so that the plural core members maybe located in independent spaces individually.

Note in the above claim the feature "evacuating and sealing the inside of the

enveloping member" is a method step and has been understood to mean "the inside of the enveloping member being evacuated and sealed".

5. Further, it is considered that the specification of claim 2 relates to an intermediate state of the insulator before heat sealing has taken place and hence as the material of the bag of D2 is also heat sealable (see page 10, line 15-16) then D2 also describes this feature.
6. Hence, the subject-matter of claim 2 does not meet the requirement of Article 33(2) PCT.

7. As regards the method claim 19

D1 describes a method of manufacturing a vacuum heat insulator comprising the steps of:

- disposing a flat core member between mutually facing heat seal layers of gas barrier enveloping members having heat seal layers (see figure 1),
- heating and pressing the portion including the core member portion present between the enveloping members at reduced pressure (see col. 2, lines 19-20) by a plate (see col. 2, lines 28-29),
- heating and fusing the mutually facing heat seal layers along the core member shape (see col. 6, line 62 -col. 7, line 14).

The method according to claim 19 differs therefrom in that the heating and pressing is carried out by a hot plate.

However, the skilled man faced with the problem of carrying out the known method in an efficient manner would use a hot plate without the need for any inventive activity.

Thus, the subject-matter of claim 19 does not meet the requirements of Article 33(3) PCT as it does not involve an inventive step.

8. Claim 20 essentially repeats the subject-matter of claim 19 except for the term "all parts" at line 3. However, it would also be standard practice to press all parts of the

insulator during manufacture. Thus, claim 20 also does not meet the requirements of Article 33(3) PCT as it does not involve an inventive step.

The presence of a second independent method claim largely repeating the subject-matter of another claim also leads to a lack of conciseness of the claims as a whole (Art. 6 PCT)

9. As regards the dependent claims 3-18,21-25 it would appear that the applicant has not adapted the numbering of the back referencing to previous claims, hence, it has been understood that all these should be reduced by one (i.e. for claim 3 read claim 2 etc.)
10. Dependent claims 3-10-18, 21-25 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, as claims 3-6,10-18 and 21 merely appear to refer to standard techniques of sealing, materials, shapes and dimensions and claims 22- 25 specify standard uses of vacuum heat insulators.
11. It should be stated that the idea of using a **hot plate** to **simultaneously** compress and heat the portion including the core member between the enveloping members at reduced pressure and thereby **also** fuse the mutually facing heat seal layers along the core member shape does not appear to be described or suggested by the prior art, as in D1 the specified temperature at col. 2 does not seem directly linked to the thermoplastic heat sealing operation. However, this feature is not considered to be clearly defined in the present claims. An independent method claim clearly defining this step would thus probably have been deemed to meet the requirements of the PCT. It is not clear whether this method step would give rise to clearly identifiable constructional differences over other production sequences.
12. The presence of the two nominally independent device claims 1 and 2 which contain a mixture of device and method features as well as overlapping terminology together with two practically identical independent method claims generally leads to a lack of clarity of the claims when taken as a whole (Art. 6 PCT).

International Application No. PCT/JP03/15368
Applicant: Matsushita Refrigeration Company, et al
PCT2108JK119jfa
04.03.2005

NEW CLAIMS 1 TO 25

1. A vacuum heat insulator comprising a gas barrier enveloping member having a heat seal layer, and a flat core member, wherein said core member is evacuated and sealed between enveloping members having mutually facing heat seal layers, and by heating and pressing the portion including the core member between the enveloping members, the mutually facing heat seal layers are heated and fused along the core member shape.
2. A vacuum heat insulator having plural core members coated with a gas barrier enveloping member, and evacuating and sealing the inside of the enveloping member, wherein said plural core members are disposed in lattice layout or zigzag layout at mutual specific intervals so as to form folding lines in two or more directions in the position between the adjacent core members, and heat seal parts of the enveloping member are disposed around the core members so that the plural core members may be located in independent spaces individually.
3. The vacuum heat insulator of claim 1, wherein the enveloping member is heated and fused by heating and pressing including the core member portions.
4. The vacuum heat insulator of claim 1, wherein all of the enveloping member positioned on the outer periphery and the enveloping member in the position between adjacent core members are heated and fused.
5. The vacuum heat insulator of claim 1, wherein there are non-seal parts not heating and fusing the enveloping member, between adjacent core members and on the outer periphery of the core members on both sides of the heat seal parts.

6. The vacuum heat insulator of claim 3, wherein holes are opened in the enveloping member so as to leave heat seal parts of specified width between adjacent core members.
7. The vacuum heat insulator of claim 2, wherein through-holes are formed in the thickness direction of the core member, and in the through-holes, too, by heating and pressing including the portion having the core member between the enveloping members, the mutually facing heat seal layers are heated and fused along the shape of the through-holes of the core member, excluding the portion having the core member in the middle.
8. The vacuum heat insulator of claim 8, wherein the shape of the through-holes is an arbitrary shape including triangular, quadrangular, polygonal, circular, elliptical, L-shape and combined shape thereof.
9. The vacuum heat insulator of claim 9, wherein holes are not formed in the enveloping member heating and fusing mutually facing heat seal layers in the area of through-holes of the core members.
10. The vacuum heat insulator of claim 2, wherein all parts having core members between enveloping members are heated and pressed.
11. The vacuum heat insulator of claim 2, wherein the heat seal parts having cores between enveloping members melted by heating and pressing, and fused with the surface portion of the core member.
12. The vacuum heat insulator of claim 2, wherein the enveloping member is cut off so as to leave heat seal parts of a specified width along the core member.
13. The vacuum heat insulator of claim 13, wherein the enveloping member is cut off by melting down.

14. The vacuum heat insulator of claim 3, wherein the plural core members are covered with the enveloping member, together a the sheet member, in a state being fixed to one side or both sides of the sheet member.
15. The vacuum heat insulator of claim 15, wherein the sheet member is made of thermoplastic resin.
16. The vacuum heat insulator of claim 3, wherein the core member is triangular, hexagonal, or octagonal in shape.
17. The vacuum heat insulator of claim 2, wherein the core member has an arbitrary shape including triangular, quadrangular, polygonal, circular, elliptical, L-shape and combined shape thereof.
18. The vacuum heat insulator of claim 2 or 4, wherein the thickness of the vacuum heat insulator is 0.5 mm or more to 5 mm or less.
19. A manufacturing method of vacuum heat insulator comprising the steps of disposing a flat core member between mutually facing heat seal layers of gas barrier enveloping member having heat seal layers, heating and pressing the portion including the core member present portion between enveloping members at reduced pressure by a hot plate, and heating and fusing the mutually facing heat seal layers along the core member shape.
20. A manufacturing method of vacuum heat insulator comprising the steps of disposing a flat core member between mutually facing heat seal layers of gas barrier enveloping member having heat seal layers, heating and pressing all parts including the core member present portion between enveloping members at reduced pressure by a hot plate, and heating and fusing the mutually facing heat seal layers along the core member shape.
21. The manufacturing method of vacuum heat insulator of claim 20 or 21, wherein a hot plate made of an elastic material is used.

22. A body warmer having a vacuum heating insulator of claim 3 disposed in clothes.
23. The body warmer of claim 23, wherein the vacuum heat insulator is inserted in a bag formed in the clothes.
24. The body warmer of claim 23, wherein the vacuum heat insulator is detachably fitted to clothes.
25. A personal computer comprising a keyboard on the top of a main body, a printed board inside of the main body, a CPU on the printed board, a cooling device for releasing heat from the CPU, and a vacuum heat insulator in a shape depending on the position of installation inside of the main body, wherein said vacuum heat insulator is any one of claims 1 to 19, and is installed at least in one of the inner side of the main body bottom positioned immediately beneath the CPU, and the back side of the keyboard positioned immediately above the CPU.